Space Weather Forecast

Issued on Thursday, 28 July 2022 at 12:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Storm intervals day 3 (30th)

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Very Low over the past 24 hours, with no significant flares observed. There are four sunspot regions on the visible disc, one of which is currently unnumbered in the southeast quadrant. However, all sunspot regions appear to be small and simple, with no obvious signs of growth or slightly decaying.

A small filament was seen to lift-off in the southern hemisphere, although no evidence of a Coronal Mass Ejection (CME) in imagery from this event. Another small filament in the southeast quadrant is showing signs of instability, although no lift-off has been observed at present, however it is being monitored as any eruption would most likely lead to an Earth-directed CME. No Earth-directed CMEs were observed.

Solar Wind / Geomagnetic Activity: Solar winds, as measured by DSCOVR at L1, slowly declined through the period from slightly elevated to near slow-ambient levels (460km/s to near 400 km/s). The strength of the magnetic field carried by the wind was mostly weak but became temporarily moderate at the end of the period, with slightly more marked fluctuations on the important north-south component. Geomagnetic activity was Quiet with a provisional Unsettled interval (kp3) between 27/2100-2400 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Activity is likely to remain Very Low to Low with only a slight chance of moderate-class X-ray flares.

Solar Wind / Geomagnetic Activity: No CMEs have been assessed as Earth-directed. Solar winds are expected to be slow-ambient initially, before the arrival of the fast wind of CH04 in the early UTC hours of day 3 (30th), enhancing solar winds to around 500km/s on days 3 and 4 (30th and 31st July). Geomagnetic activity is forecast to be mainly Quiet with a chance of Unsettled intervals, then to become Unsettled and Active with an outside chance of G1/Minor storms on day 3 (30th) and possibly day 4 (31st).

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	30	5
Strong	G3	No	1	1	2	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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